1672. In 1682, he says that Grew published an enlarged edition of this smaller work under the *same* title. But this is not really the state of the case. The title of the large book is "The Anatomy of Plants, with an Idea of a Philosophical History of Plants." The volume has Sir Christopher Wren's *imprimatur*, which runs as follows:—

"At a meeting of the Royal Society, Feb. 22, 168½, Dr. Grew having read several *Lectures* of the *Anatomy* of *Plants*, some whereof have been already printed at divers times, and some are not printed; with several other *Lectures* of their *Colours*, *Odours*, *Tasts*; as also of the *Solution* of *Salts* in *Water*; and of *Mixture*; all of them to the satisfaction of the said *Society*: It is therefore Ordered, That He be desired, to cause them to printed (*sic*) together in one Volume.

"CHR. WREN, P.R.S."

The "Anatomy of Plants Begun" is simply reprinted in this volume. "The Anatomy of Leaves, Flowers, Fruits, and Seeds" is, however, printed for the first time. In the second part of this, called "The Anatomy of Flowers prosecuted with the bare eye and with the microscope," which was read before the Royal Society, Nov. 9, 1676, is contained Grew's discussion of the function of the parts of the flower in which the statement about Millington occurs.

Grew's "Anatomy of Plants" can no more be described as a second edition of the "Anatomy of Plants Begun" than Prof. Huxley's "Lay Sermons" can *collectively* be described as a second edition of any *one* essay republished in that volume.

The object of the quotation from Sprengel was to show what was his opinion of the claims of Camerarius to be considered the discoverer of sexuality in plants. As Mr. Bennett (vol. xiii. p. 166) makes a point of nothing being cited from Sprengel as regards Millington; here is what Sprengel says on that head. Speaking of Grew:—

"Summam vero meruit et seræ posteritatis gratitudinem, quod primus sexuum differentiam in partibus vel fœcundantibus vel fœcundandis *non invenerit, sed tamen defenderit* ac evulgaverit. Ipse verecunde satis et candide Thomam Millingtonium, Savilianum professorem Oxonii nominat, qui sibi dixerit, apparatum eum seminiformem (the anthers) vices partium mascularum probabiliter gerere" ("Hist. rei Herb.," ii. 14).

Next as to Camerarius and Ray, Mr. Bennett says that the observations of the first antedated those of the second by two years. On Mr. Bennett's own showing the date of Camerarius's tract is 1694 (NATURE, vol. xiii. p. 86). The date of the first volume of Ray's "Historia," in which he alludes to the subject, is 1686.

As to Theophrastus it is well known that classical writers on natural history were aware that the unisexual flowers of the date required the "pulvis maris," or pollen, to enable them to set their fruit. But I am not aware that till the time of Grew and Millington the fact that the vast majority of plants contain stamens and ovaries, *i.e.*, both male and female organs, had ever been ascertained. What these persons did for the first time was to point out the function of the essential organs of the flower.

Mr. Bennett, instead of taking his facts secondhand from Prof. Sachs's no doubt excellent "Geschichte," ought to have looked into the authorities himself. He would then avoid the error of quoting non-existent editions and of drawing conclusions which would be inexpugnable if they were not based on erroneous dates.

A. B. C.

Article "Birds" in "Encyclopædia Britannica"

IN that portion of the article "Birds," which I have lately written for the "Encyclopædia Britannica," I said (page 729, column 2) that *Odontopteryx* had "jaws armed with true teeth," and in this respect resembled *Ichthyornis*. The mistake has just been pointed out to me, and I shall be greatly obliged by being allowed to correct it, as far as is possible, in NATURE. The sentence should run thus: "jaws armed with tooth-like processes, and in this respect differing from Professor Marsh's *Ichthyornis*."

ALFRED NEWTON

Athenæum Club, Jan. 3

Fertilisation in the Basidiomycetes

IN your review of Dr. Pringsheim's "Jahrbücher" (NATURE, vol. xiii. p. 156) you refer to Dr. Max Reess' paper on the Fertilisation of the Basidiomycetes; this paper you compare with the results recently obtained by Van Tieghem, Dr. Eidam, and myself, and you say that the observations of the three former all tend in one direction, which fact should lead botanists to look with very great caution on my results, which are somewhat different.

As I am tolerably well acquainted with the three papers first mentioned, perhaps you will kindly allow me to point out that Dr. Reess' carpogonium, and the carpogonium of Dr. Eidam, are very different bodies, and that the latter author, in the "Botanische Zeitung," even puts a note of interrogation before his own interpretation of the body he figures as a possible carpogonium.

The spermatozoids as described and illustrated by me in the *Gardeners' Chronicle* for Oct. 16 and 23 last, are not essentially different from Dr. Eidam's spermatia; they agree in size, but I maintain that the threads which bear these male bodies come direct from the cystidia, and not from the basidia, and that they are at first spherical. In Dr. Eidam's excellent plate there are sixteen germinating spores shown which do *not produce spermatia*, and in each instance the spores are shown *as ruptured*. Three other spores are shown as *producing spermatia*; now these latter spores are engraved to twice the size of the former, and all three are *unruptured*. The explanation simply is that the latter threads have not come from the spores at all, but from a cystidium—the spores engraved have not germinated, and have merely been *washed against* the spermatia-bearing threads.

As for the species experimented upon abroad (except Van Tieghem's plant), one is rare, and the other not British; the plants I have been working upon are common everywhere.

In the January number of the *Popular Science Review* will be found an illustrated paper of mine on the "Reproduction of *Agaricus lacrymabundus*." In this essay will be found not only some new facts as to the reproduction process in the Basidiomycetes, but a *résumé* of the views now generally held on this subject.

WORTHINGTON G. SMITH

The Late Eclipse

I FIND in NATURE, vol. xiii. p. 86, a letter from Dr. Schuster, commenting on some remarks made by me last April respecting the photographic results of the late eclipse. He appears to consider that these remarks related to him personally, which certainly was not my intention. He speaks further of a mathematical solution promised by me, for which he has "had to wait already a considerable time." I remember nothing of such a promise, nor can I conceive how I could have promised, instead of giving at once, the solution of so simple a matter. Dr. Schuster proves very readily that the spectrum of the corona can be photographed in one minute; but I am not aware that anyone has questioned the fact. What I questioned myself was whether the spectral images of the corona can be so photographed that the true extension of the corresponding coronal envelopes can be shown. To quote my own words ("Science Byways," p. 168): "The whole light" [of the corona] "acting at once to form a photograph does not show *the full extension* of the corona, the outskirts simply losing themselves through excessive faintness. . . . How, then, can a minute portion of that light produce any photographic trace" [of the *outskirts*]? "How much less can this minute portion show *the whole extension* of the green solar envelope?" It was the hope that this might be effected which I described as mathematically unsound.

I am so busy that I cannot enter further into this matter. But in any case the only justification of controversy respecting it would be the hope that some purpose useful to science might be subserved. This seems unlikely.

RICHD. A. PROCTOR

New York, Dec. 16, 1875

Blowpipe Analysis

THANKING you sincerely for the very well written and not altogether uncandid (if rather severe) review of my lately published work on this subject (NATURE, vol. xiii. p. 164), against any part of which I would not at present presume to appeal, I would ask for a corner of your valuable space to explain, with regard to "the production of a precipitate" of sodium sulphide by the addition of a drop of water to a fused mass of soda with a sulphide on aluminium plate, that the term "precipitate" undoubtedly used by me (as the reviewer says so) is obviously a "slip of the pen," for there can be no room to *precipitate* anything in a drop of water from a fused mass on aluminium plate.

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What I must have meant to say is, that the sodium sulphide appears like a precipitate, *i.e.* as a powder, in the partly dissolved mass. The reason of its appearing to be black on aluminium, and not, as it ought orthodoxically to be, brown, I cannot tell, as the metal is not attacked. Perhaps my reviewer can? I only say that it is so.

May I take this opportunity of soliciting you to afford, if possible, a little more space in your valuable journal, to the admittedly neglected subject (in England) of blowpipe analysis? It is, I can assure any of our chemists who have not much employed it, *a most fascinating* study, which will amply repay any leisure time expended upon it.

W. A. ROSS

Meteor in the Daytime

DEC. 22, about 2 P.M., as our servants were sitting at dinner by the kitchen window, two of them were startled by the sudden appearance of a b rilliant meteor descending in the E. with a little inclination to the N. It was not as large as the moon, but much larger than Mars or Saturn, white, and like lightning, with a very quick course, leaving a train as broad as itself, and preserving its full size till it was lost behind the top of an oak tree at a little distance, whose branches, though leafless, seem to have concealed it from view. The next day I found by means of a compass and a joined ruler, that its azimuth was E. by N., its inclination towards N. about 10°, the upper window frame, where it probably came into sight, 48°, and the top of the tree 21° above the horizon. I have not, as yet, heard of any other observation of this remarkable meteor. The position of Hardwick Vicarage, where it was seen, according to the Ordnance Map, is Long. W. 3° 4′ 23″, Lat. N. 52° 5′ 20″.

T. W. WEBB

Protective Resemblance in the Sloths

AS "mimicry" and "protective resemblance" have chiefly been noticed among insects and the lowest of vertebrated animals, the following observation regarding the three-toed sloth, made at the beginning of this century, and therefore much in advance of the period at which attention had been directed to this subject, is, in these days, not without interest. It is taken from a work not frequently met with, namely, Baron Albert von Sack's "Narrative of a Voyage to Surinam" (London, 1810). In chap. xvi. at p. 170, he says:—"The colour and even the shape of the hair are much in appearance like withered moss, and serve to hide the animal in the trees, but particularly when it gets that orange-coloured spot between the shoulders, and lies close to the tree; it looks then exactly like a piece of branch where the rest has been broken off, by which the hunters are often deceived." The colour of the hair of the body is thus distributed in *Arctopithecus castaneiceps*, *A. griseus*, and *A. flaccidus* ("Notes on the Species of Bradypodidæ in the British Museum," by the late Dr. J. E. Gray. Proc. Zool. Soc., 1871, p. 428, Plates xxxv.–xxxvii.).

Brants, in his "Dissertatio Zoologica Inauguralis de Tardigradis" (Lugdun. Batav., 1828), p. 28, says of the sloths:—"At provida natura, cum animanti negaverit arma et tela, velleri cum colorem tribuit, quo subducatur oculis ferarum et adversariorum fere eadem ratione, ac Pallas retulit de *Pteromye volante*." The passage to which reference is made is in the "Novæ species quadrupedum e glirium ordine," p. 357:—"Dum vero in Betuletis præsertim vitam agunt, sapienter a natura perspectum est, ut omni tempore anni exalbido canescentem colorem velleris servent, quo cortici betularum ita fiunt similes, ut scandentes vix, imo sub diluculum, quo tempore præsertim excurrunt, plane non conspici eminus possint, coque ab avibus rapacibus nocturnis securiores sunt." Reference is also made to Prince Maximilian of Nieuwied's "Beiträge zur Naturgeschichte von Brasilien," tome ii. s. 480.

J. C. GALTON

Dec. 29, 1875

Coffee in Dominica

IN NATURE (vol. xiii. p. 38, and under the head of "Coffee in Dominica"), it is stated that the "falling off in the cultivation of the coffee plant, in a soil and climate which experience showed was eminently suited to it in every respect, was due to the extensive destruction of the plants by what was there known as the coffee blight." The foregoing statement requires this qualification, that after the appearance of the coffee blight, and when the coffee crop was gradually decreasing in quantity, the old coffee planters made no attempts to check the ravages of the destroying insect, but, in many instances, cut down the valuable trees, planted the sugar-cane, and converted their coffee-works into sugar-works. I could mention the names of several estates where what I have described was done. I think it right also to add that in some portions of Dominica, where the coffee-trees were simply abandoned, they now stand, and, considering their age and the neglect to which they have been exposed, they bear fairly well. During the last two years, and since the disastrous fall in the price of cane sugar, I have been endeavouring to re-introduce here the coffee cultivation, and, on the Tabery estate, 12,000 young trees of my own planting are doing well. You will confer a great and lasting benefit upon this beautiful but neglected and almost unknown island by calling attention to its capabilities as a coffee-producing country.

EDMUND WATT

South Chiltern, Dominica, Dec. 11, 1875

The Law of Storms

I HAVE to thank you for publishing, in NATURE of Dec. 2, 1875, my letter in reply to M. Faye's theory of cyclones, and I have now to submit some remarks on his theory of waterspouts.

I understand him to maintain that the dark part of the waterspout, which we see, contains a core of transparent air, which is descending at the centre of a vortex, and that the dark visible external part is a cloud formed by an ascending counter-current.

All this is unproved, and I think baseless. No dynamical reason can be assigned why there should be a downward current at the centre of the vortex. If the waterspout is formed in a vortex, which I think probable, though I am not certain of it, the vortical motion will produce not a downward but an upward current at its centre, in consequence of the diminution of barometric pressure, due to the air being thrown to the circumference by the centrifugal force. We see such upward currents formed in the little dust-whirlwinds that form themselves over streets and roads in windy weather.

Further, if M. Faye's theory were true, and if the waterspout were transparent at the centre, it could not be so well defined and solid as it usually is, nor could it be formed so rapidly.

The true theory of waterspouts is expounded in Espy's "Philosophy of Storms," a work which, notwithstanding its great error of denying the rotation of cyclones, made an era in meteorology, and, so far as I am aware, is not yet superseded.

When vapour is condensed into water, forming cloud, the latent heat of the vapour is liberated and expands the air. A simple calculation shows that, after deducting the destroyed volume of the condensed vapour, the increased volume of the air due to this expansion is between four and five times as great as the volume of the vapour before condensation. If, then, the air is nearly saturated with moisture, and the temperature in a state of convective equilibrium for dry air (that is to say, when the difference between the temperatures of any two strata is that due to the difference of their pressures), and condensation begins in any column of air, the effect of liberating this heat will be to make the air of that column warmer and lighter than the air at corresponding heights in the surrounding columns. What follows is from Espy's work, page 44:—

"It begins, by its diminished specific gravity, to rise, and then, if all circumstances are favourable, the cloud will increase as it ascends, and finally become of so great perpendicular depth, that by its less specific gravity the air below it, in consequence of diminished pressure, will so expand and cool by expansion, as to condense the vapour in it; and this process may go on so rapidly that the visible cone may appear to descend to the surface of the sea or earth from the place where it first appears, in about one or two seconds. The terms here employed must not be understood to mean that the cloud actually descends; it appears to the spectator to descend, but this is an optical deception, arising from new portions of invisible vapour constantly becoming condensed, while all the time the individual particles are in rapid motion upwards."

To this I will add as very probable, if not quite certain, that the rarefaction thus caused at the waterspout will produce an inflow of air from all sides, and this will produce a vortex at the centre; this again, by its centrifugal force, will increase the rarefaction, and thus will intensify the effect. But the commencement of the waterspout is in the way described by Espy in the above extract.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim, Dec. 12, 1875

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